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99729-4

NPIC/P&DS/D/[redacted] 25X1A
23 June 1966

MEMORANDUM FOR THE RECORD

SUBJECT: Pre-delivery inspection of [redacted] Viewer 25X1

1. The undersigned, with [redacted], inspected the 25X1
subject instrument on 20-21 June 1966 with the following results:

a. Defficiencies and Status:

(1) Intermittant Loss of X and Y Scanning: Apparently corrected after first morning by vacuuming/cleaning dust from Control Console; however, they will disassemble certain switches and clean electrical contacts.

(2) MM, Counters Malfunctioned:

(a) Left X = Plus(+) count only - corrected
(b) Right X = Counts backwards - corrected
(c) Right Y = Counts backwards - corrected
(d) Right Y = Minus(-) count only - corrected

(3) Obstruction in Interpupillary Adjustment Below 62mm Setting: Will be corrected prior to delivery.

(4) Excessive Off-Center Condition of Both Reticle Dots: Corrected the left dot, will correct the right at installation.

(5) Excessive Off-Center Condition of Two Lowest Power Objectives on Both Sides: Intended to correct the left side as proof of capability, but ran out of time. Both will be properly adjusted at installation to match previous instruments.

(6) Vacuum Hold-down Time Delay not in Operation: Did not prevent film pull-down, but it will be set up before delivery.

(7) Y-Motion Translation Did Not Reach Edges of 9.5" Film: Front was corrected and both will be at installation by re-setting limit switches.

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2. Although system resolution missed requirements at several test points (see attached notes), never by more than one target element, which can be accounted for by individual visual characteristics.

3. Although there is no accuracy specification for Navy measurement system, the encoders providing 2.5-micron increments were checked while connected with the [redacted] X-Y Counters. Repeatability was invariably to the same reading and never more then one increment off. As discussed with [redacted] will install an external connection for the Navy readout system with no charge, if it does not delay delivery; otherwise this will be Navy responsibility. * 25X1A 25X1A

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4. [redacted] requested a written directive to deliver Serial 103 to [redacted] for their records - this is being prepared now.

25X1A

5. Since all defficiencies noted are corrected or planned for correction at installation, permission for delivery (now scheduled during first week of July) was given by the undersigned.

[redacted] 25X1A

ADDENDUM:

25X1A

The [redacted] Versatile Stereoscope being shipped from [redacted] for use on Project 99726-5 had not arrived and could not be checked for resolution, etc. [redacted] and determined it "was shipped on 16 June 1966." 25X1A 25X1A 25X1A

Distribution:
Orig - Project File (99729-4)
2 - DB/ISS Chronos

pnf

25X1A

* This offer made by [redacted] estimated cost to them of [redacted] would be absorbed if parts can be obtained in one week. - AM. 25X1

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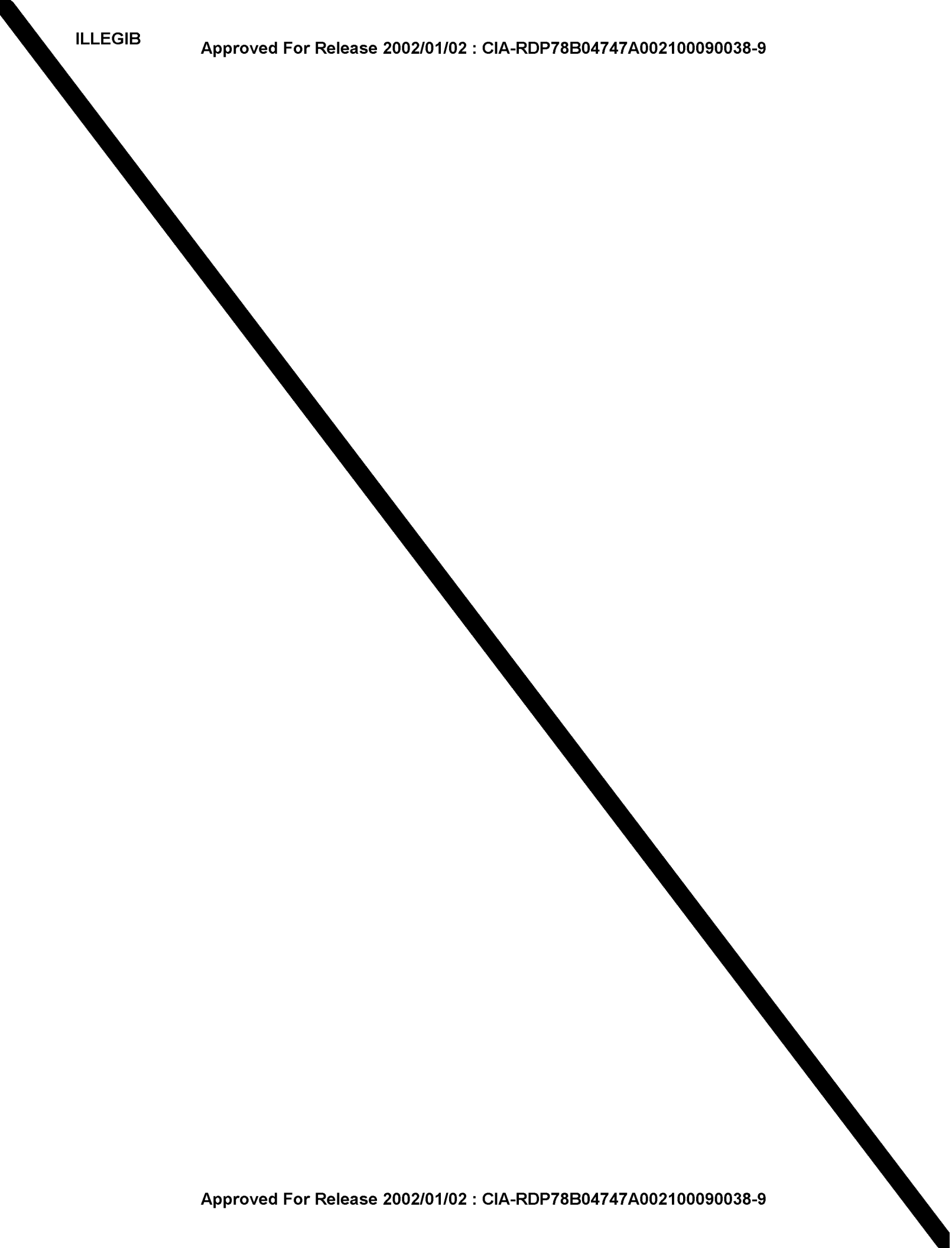

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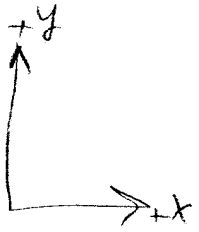
ILLUMINATION

General:

ON-OFF switch OK
Dimming control OK
Light levels OK



High Intensity:

Left Right OK
Dimming OK
Light level OK

COUNTERS

Operation OK
Zero Set-Reset OK
Proper count for movement - measure L X + counts only OK
R Y + counts backward OK
– counts only OK
X counts backward OK

FILM CONTROLS

Looping check switch position OK
Return - Manual withdraw and lock OK
Loop forming left-right OK
Film holddown OK
Time (Fast) ——— (Film dry, cracking not representative).

[redacted]

Customer copy

OPTICAL TRAIN CHECKOUT

Check control of eyepiece assembly for function and operation.

Eyestations — Normal OK; Reversed OK

Image Enhancer switch operation ON - OFF — OK

Channel Selector — Stereo OK; Superimpose OK

Left Image Selector — Off OK; Normal OK; Reversion OK

Right Image Selector — Off OK; Normal OK; Reversion OK

Image Rotation Dials 0° to 360° — Operation OK - (L) OK - (R); Stops OK - (L) (OK - (R)

0° Set Up Check

Eyepiece optics in superimposed mode normal image selector & straight edge set up on platen X axis both channels within .001" in 6 inches (use carriage travel and dot to run out straight edge). In turn dial normal to reversion mode an image of offset straight edges should remain parallel within 1 for any combinations of normal or reversion modes in either channel.

OK perhaps 1/2 I°

Interpupillary Adjustment 52mm to 73mm _____ check clearance at (52) before delivery

With Image Enhancer off, focus eyepiece to obtain sharpest image of fiber bundle pattern on end of fiber cable for both eyepieces. Turn Image Enhancer on. Check fine phasing control for center position with sharpest image of Air Force Resolution Chart at midposition of fine phasing control rotation. Introduce d[illegible] system. Check size (1 mm) [illegible]

approximately 4 arc minutes).

		LEFT	RIGHT
1-4 arc minutes required	Maximum	OK	OK
at all system magnifications	Minimum	OK	OK

DOT CENTERING CHECK

Turn on Image Enhancer. Set up 4 arc minute dia. dot (1 multifiber) and cross hair reticles at field stops. Is dot on center? Estimate center error in the following modes with center reticles at field stops. Maximum allowable error is to be 4 arc minutes with any combination.

		ERROR (ARC MINUTES) Normal Eye Sta.	Reversed Eye Sta.
Run zoom magnification through range	Left	OK ✓	OK ✓
	Right		
Rotate Image	Left	OK ✓	OK ✓
	Right		
With image selectors Normal to Reversal, rotate image in four 90° steps between trial for test.	Left	✓	✓
	Right		
With channel selector Stereo to Superimpose, judge center distance on dots, in Normal to Reversion, in rotation and at zoom extremes, each channel, 4 arc minutes error maximum any combination.	Left		
	Right		

STATINTL AT

STATINTL AT

Check intensity control of reticle OK

Can dot be seen relative to open gate high intensity maximum setting?	Left	OK	OK
	Right	OK	OK

Check centering of each objective lens by indexing turret. Use highest magnification objective lens for centering. ± 2 minutes maximum error for other lenses (line width cross hair reticle set up in field stop).

	ERROR (ARC MINUTES)	
lens	Left	Right
1.6-6.8X	Redot	Redot
29X-12X	" X	" X
101-43X	?	OK
30X-128X	OK	OK

Check zoom control for each magnification. ? —

Image to remain on center and in focus throughout full range of zoom without changing objective focus. See resolution optical system below. OK

Zoom shall not coast after power cut off. OK

Zoom shall be capable of manual control. OK

Zoom dials properly oriented for correct indication of zoom limits. OK

Check system magnification at low and high ends of each range. —

OBJECTIVE LENS RANGE		L E F T		R I G H T	
Low	High	Low	High	Low	High
1.6	6.8X				
2.9	12X				
10.1	43X				
30	128X				

Overlap of magnifications for each range — LEFT / RIGHT

_____ _____

_____ _____

_____ _____

_____ _____

Independent focus control for each objective OK

Resolution of optical system using Air Force Resolution Charts

Focus objective at high end only. Do not refocus at low end

OBJECTIVE LENS RANGE		L E F T				R I G H T			
Low	High	Low	Req.	High	Req.	Low	Req.	High	Req.
1.6	6.8X	14.2	13(3/5)	57	54(5/6)	16	13(3/5)	57	54(5/6)
2.9	12X	22.6	24(4/5)	101	93(6/4)	28.5	24(4/5)	101	93(6/4)
10.1	43X	114	80(2/5)	287	300(0/5)	114	80(/5)	322	300(0/5)
30	128X	256	224(0/2)	574	640(1/5)	287	224(0/2)	574	640(1/5)

STATINTL Std. A.F. Target [redacted]

200X Reduced A. F. Target [redacted]

(64-645 1/mm)

Eye station capable of adjustment of ± 3 inches in vertical and horizontal planes with lock. OK

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Eye station capable of rotation of 30 degrees about "X" axis with lock. OK

[redacted]

US AIR FORCE RESOLUTION TARGET

Lines Per Millimeter

Group No.	-2	-1	0	+1	+2	+3	+4	+5	+6	+7
1	.250	.500	1.00	2.00	4.00	8.00	16.0	32.0	64.0	128
2			1.12	2.24	4.49	8.98	18.0	36.0	71.8	144
3			1.26	2.52	5.04	10.1	20.1	40.3	80.6	161
4			1.41	2.83	5.65	11.3	22.6	45.2	90.4	181
5			1.58	3.17	6.34	12.7	25.4	50.7	101.4	203
6			1.78	3.56	7.11	14.2	28.5	56.9	113.8	228

Multiply lines/mm value given in above table by magnification ratio of system to obtain true value of resolution.

CHART OF RESOLVING POWER VALUES WHEN ORIGINAL TARGET, U.S.A.F. 1951 IS OPTICALLY REDUCED 200 TIMES

Group No.	Target No.	Resolving Power (Lines/mm)
-2	1	50.0
	2	56.2
	3	63.0
	4	70.6
	5	79.2
	6	89.0
-1	1	100
	2	112
	3	126
	4	141
	5	158
	6	178
0	1	200
	2	224
	3	256
	4	282
	5	318
	6	356
1	1	400
	2	450
	3	504
	4	566
	5	636
	6	712

ILLUMINATION CHECKS

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General illumination levels (ft.-lamberts) measured at film plane at [redacted]

	Low	High
Left	___	____
Right	___	____

High Intensity illumination (maximum brightness) measured at film plane.

	Left	Right
Color Temperature	____	_____

High Intensity illumination level (foot-lamberts) measured at eyelens

Left ___ Right ____

Color temperature at 50% level measured at film plane

Left ___ Right ___

Temperature above ambient for film with average density of

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2 left in high intensity light path for 30 minutes. Use 30-128X range at maximum brightness setting and with new lamps in light source

[redacted]

Left _____ degrees F above ambient

Right _____

FILM HOLDDOWN AND TRANSPORT

		5"	9 1/2"
Vacuum pull down time adequate STATINTL	Left		
	Right		
Measure at [redacted] Across both formats			

Torque required to operate film transport _____ ?

Two independent systems of film spooling. YES

Looping capability single film 18-19 ft 17' slip-7

Loop holding capability. Advance film with fixed loop. OK

		LEFT	RIGHT
Operation of film brakes after high speed film advance with fully loaded 500 ft. spools	Inboard		
	Outboard		

OK clock at [redacted] again STATINTL

Operation of looping mechanisms to thread film _____ OK

~~Trouble w/ clutches - don't disengage all the time~~
~~Retain input tension~~